

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellants: Marc Scott Hodes, *et al.*

Serial No.: 10/674,448

Filed: September 30, 2003

Title: METHOD AND APPARATUS FOR CONTROLLING THE FLOW RESISTANCE
OF A FLUID ON NANOSTRUCTURED OR MICROSTRUCTURED SURFACES

Grp./A.U.: 1797

Examiner: Jyoti Nagpaul

Confirmation No.: 4121

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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ATTENTION: Board of Patent Appeals and Interferences

Sirs:

APPEAL BRIEF UNDER 37 C.F.R. §41.37

This is an appeal from a Final Rejection dated February 22, 2008, of Claims 1-6 and 12-13. The Appellants submit this Brief with the statutory fee of a large entity as set forth in 37 C.F.R. §41.20(b)(2), and hereby authorize the Commissioner to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 08-2395.

This Brief contains these items under the following headings, and in the order set forth below in accordance with 37 C.F.R. §41.37(c)(1):

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF CLAIMED SUBJECT MATTER
- VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL
- VII. APPELLANTS' ARGUMENTS
- VIII. APPENDIX A - CLAIMS
- IX. APPENDIX B - EVIDENCE
- X. RELATED PROCEEDINGS APPENDIX

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is the Assignee, Lucent Technologies Inc.

II. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 1-6 and 12-13 are pending in this application. Claims 7-11 are canceled. Claims 1, 4 and 6 are rejected under 35 U.S.C. §102(b). Claims 2-3 and 12-13 are rejected under 35 U.S.C. §103(a). Claim 5 is objected to as being dependent on a base claim but would be allowable if rewritten in independent form. On the same day as the filing of the present appeal brief, an amendment has been filed under 37 CFR 41.33(b)(2) to rewrite Claim 5 in independent form, thereby removing the objection to Claim 5. Each of the pending claims and are being appealed.

IV. STATUS OF THE AMENDMENTS

The Examiner issued a Final Rejection on February 22, 2008. No other amendments to the claims have been made subsequent to the Examiner's Final Rejection, except for Claim 5, which has been amended to be rewritten in independent form.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Various embodiments are directed, in general, to an apparatus for controlling the flow resistance of a fluid (Title). Example embodiments of the apparatus are illustrated in FIG. 7A-7B and FIG. 8A-8C, and reproduced below (illustrations 1 and 2, respectively). The apparatus comprises a substrate 805 having at least a first surface, and, a plurality of closed cells 701 disposed

in a predetermined feature pattern 805 on the at least a first surface. The apparatus also comprises a means for changing the pressure of at least a first fluid disposed within the plurality of closed cells in order to cause a selected liquid 801 to change the degree of penetration of the feature pattern (e.g., compare FIGS. 8a, 8B and 8C; page 8, line 21-page 11, line 1; page 11, line 18-page 14, line 7).

FIG. 7 A

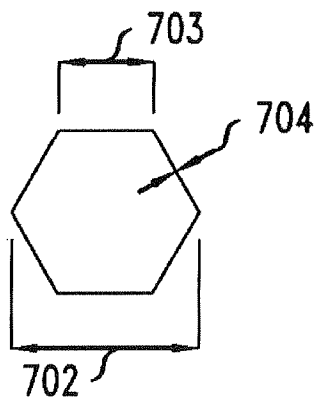


FIG. 7 B

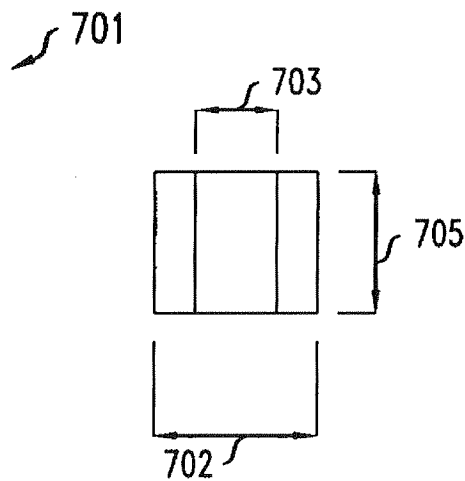


Illustration 1

FIG. 8 A

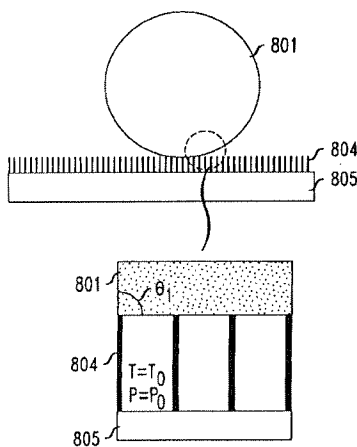


FIG. 8 B

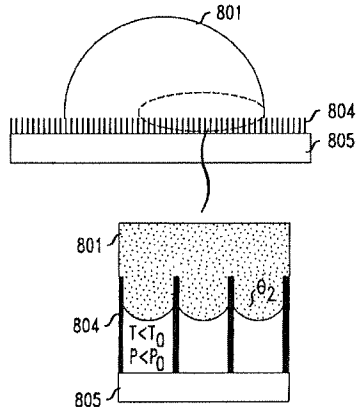


FIG. 8 C

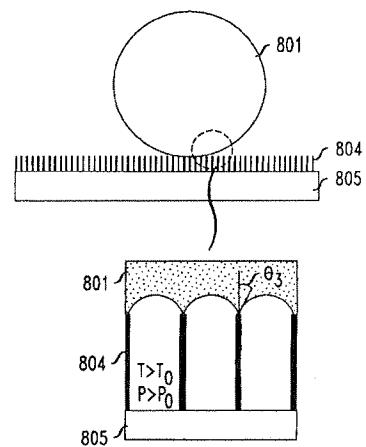


Illustration 2

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. The first issue presented for consideration in this appeal is whether Claims 1, 4 and 6, as rejected by the Examiner, are anticipated in accordance with 35 U.S.C. §102(a) by U.S. 6,603,444 to Kawanami et al. ("Kawanami").

2. The second issue presented for consideration in this appeal is whether Claims 2-3 and 12-13, as rejected by the Examiner, under 35 U.S.C. §103(a) are made obvious from Kawanami in view of EP 0290125 A2 to Humphries ("Humphries").

3. The third issue presented for consideration is whether claim 5, which is subject to an objection, should be allowed.

VII. APPELLANTS' ARGUMENT

For the reasons set forth below, the invention recited in Claims 1-6 and 12-13 are not anticipated nor made obvious by the art applied by the Examiner.

1. The Office Action does not establish that Kawanami anticipates Claim 1

The Appellants submit that the Examiner has not established grounds for Kawanami to anticipate each and every element of Claim 1.

Claim 1, among other things, recites, "means for changing the pressure of at least a first fluid disposed within said plurality of closed cells in order to cause a selected liquid to change the degree of penetration of said feature pattern."

The Examiner acknowledges (Office Action of 06/27/2008, Section 2.2) that Kawanami does not explicitly teach the above-recited elements of Claim 1. The Examiner, citing FIGS. 3A-3B and Col. 7, Lines 14-38 of Kawanami, then asserts that a light/lamp or heat given off by Kawanami's light inherently changes the temperature and pressure of a fluid in closed cells and thus causes the

liquid to move.

The Appellants respectfully maintain that the Examiner has not established that Kawanami discloses a light that changes the temperature of Kawanami's fluid sufficiently to cause a liquid to change its degree of penetration into closed cells. The Appellants present two reasons in support of their position that the Examiner is incorrect:

Independent Reason A is that the Examiner does not cite any portions of Kawanami that support either that a light or lamp actually causes temperature or pressure changes in Kawanami's first liquid 307 or electrolyte solution 308 (Kawanami, FIG. 3A and 3B, presented in Illustration 3 herein).

Independent Reason B is that the Examiner does not provide any support to conclude that the asserted light-induced changes to one of the liquids actually would inherently or otherwise cause Kawanami's solution 308 to change the degree of penetration into closed cell.

Independent Reason A for Novelty

The text portion of Kawanami relied on in the Office Action states:

In the state in which no voltage is applied between the active element array substrate 303 and the opposed electrode 305 of aluminum (FIG. 3A), i.e., when $V=0$, the contact angle θ_0 is small between the first liquid 307 and the substrate 301 with the surface treatment layer 304 formed thereon and thus the light is hardly converged. Therefore, most of the light is cut by the mask 309, so that the display of each pixel is in the off state (dark display).

When the voltage is applied between the active array element substrate 303 and the opposed electrode 305 (FIG. 3B), i.e., when $V=V_0$, the interfacial tension varies between the first liquid 307 and the electrolyte solution 308 to deform the interface, whereby the contact angle θ_v becomes larger than the contact angle θ_0 under no voltage between the first liquid 307 and the substrate 301 with the surface treatment layer 304 formed thereon ($\theta_v > \theta_0$). Therefore, the light is converged at almost one point in each light-transmitting portion of the mask 309, and most of the light travels through the mask 309, so that the display of each pixel is in the on state (bright display). Since the active element array substrate 303 is used herein, the first liquid 307 can be driven independently one by one in the array of pixels, by applying the

voltage to all the signal lines in synchronism with the sequential activation of the scan lines. (Kawanami, Col. 7, Lines 14-38)

Kawanami's FIG. 3A and 3B, are presented in Illustration 3 below:

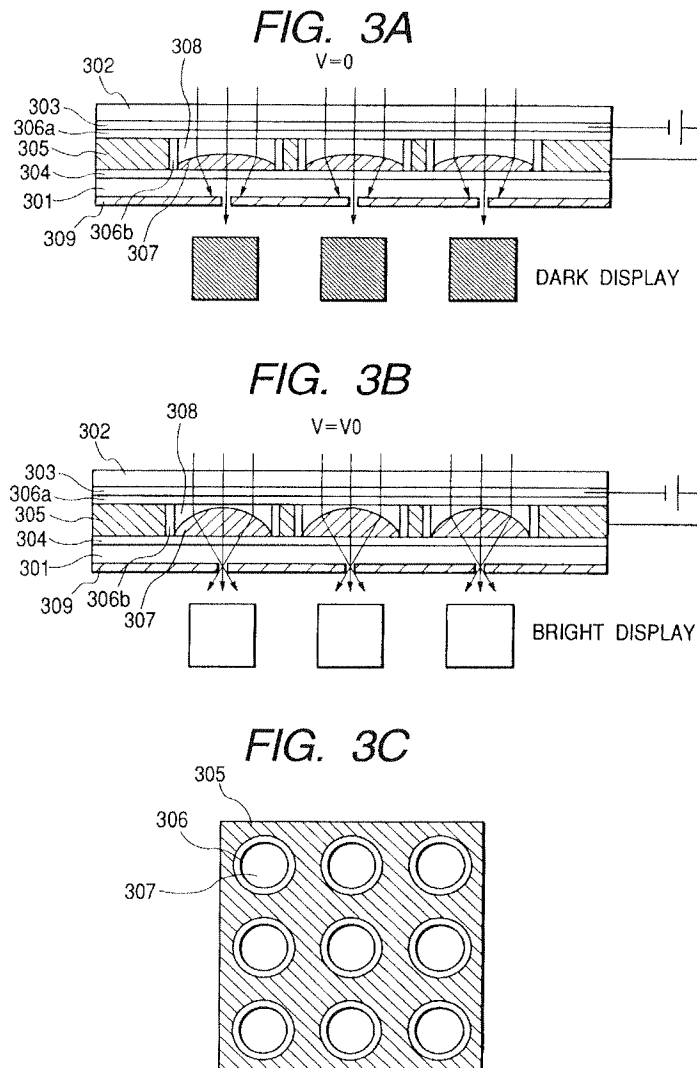


Illustration 3

The Appellants do not find, nor has the Office Action pointed out, where these portions of Kawanami teach a light or lamp causing temperature or pressure changes in Kawanami's first liquid 307 or electrolyte solution 308. Similarly, inspection of FIGS. 3A-3C (illustration 3) reveals that these figures do not even appear to depict a lamp, and therefore, the distance of a lamp or other light

source, and their potential to cause heating of the structures shown in the figure, is not disclosed. Therefore, there is no reason to believe based on these figures and text, that a light or lamp causes temperature or pressure changes in Kawanami's first liquid 307 or electrolyte solution 308.

Indeed, the cited parts of Kawanami do not even suggest that the light has any effect on any liquid. Rather than using light to heat a liquid, Kawanami teaches using a voltage to vary a surface of the liquid (e.g., a voltage is applied between the active array element substrate 303 and the opposed electrode 305). There is even evidence that Kawanami takes steps that would inherently avoid such temperature induced changes to his display device. For example, Kawanami depicts a lamp 401 positioned remotely away from the display element 405, and the lamp 401 pointing away from the element 405 and towards a reflector 402 (see Kawanami, FIG. 4A, presented in Illustration

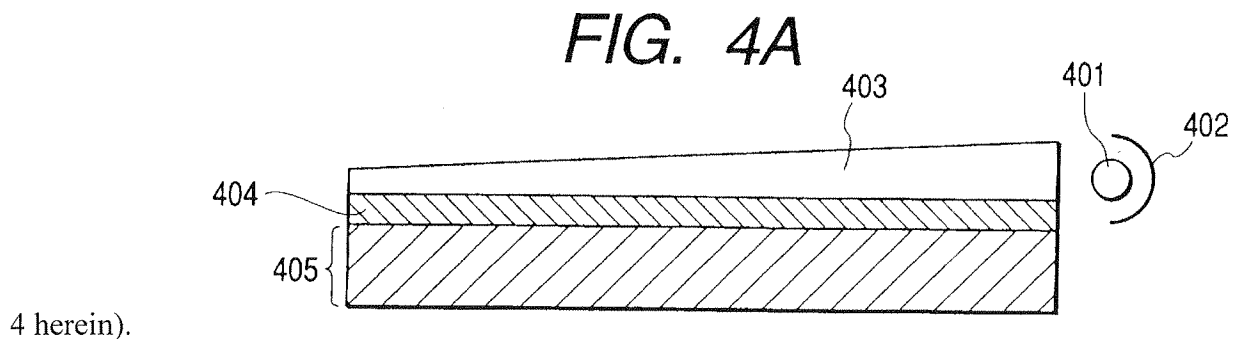


Illustration 4

Based on these considerations, the Appellants submit that the assertions made in the Office Action are conclusory with no rational underpinning to support anticipation of the about-recited features of Claim 1.

Independent Reason B for Novelty

Kawanami's first liquid 307 and electrolyte solution 308 appear to both be located in sealed chambers. For example, FIG. 3A-3C of Kawanami (Illustration 3) depicts the liquid 307 and solution 308 in chambers bounded on all sides by the substrate 304, and the insulators 306a and

306b. Therefore, it is not clear how there could be a means of changing the degree of penetration of the electrolyte 308 into these sealed chambers, even if some light or lamp used by Kawanami could induce changes in the temperature or pressure of the liquid 307 and solution 308.

Accordingly, the Appellant respectfully request the Board to withdraw the §102(a) rejections with respect to Claim 1 and its dependent claims.

2. The Office Action has not established that Kawanami in view of Humphries supports a *prima facie* case of obviousness Claim 1 and its dependent claims

For the reasons presented in Section 1, Kawanami does not teach or suggest all of the elements of Claim 1, which Claims 2-4 and 12-13 are dependent on, and, the Office Action did not rely on Humphries to cure these deficient teachings or suggestions of Kawanami.

In view of the foregoing remarks, the cited references as applied by the Office Action do not establish a *prima facie* case of obviousness to support the rejection of Claims 2-4 and 12-13 under 35 U.S.C. §103(a).

3. Claim 5 should also be allowed, because it has been amended to be in independent form.

The Office Action only objected to Claim 5 as depending on rejected claim(s). Thus, the fact that Claim 5 has been amended herein to be in independent form provides a second independent reason for allowing Claim 5.

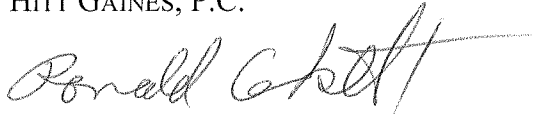
The Appellants therefore respectfully request the Board to remove the § 103(a) rejection of Claims 2-4 and 12-13.

Conclusion

For the reasons set forth above, the Claims on appeal are not anticipated by Kawanami and are patentably nonobvious over Kawanami in view of Humphries. Accordingly, the Appellants respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner's Final Rejection of all of the Appellant's pending claims.

Respectfully submitted,

HITT GAINES, P.C.

A handwritten signature in cursive script, appearing to read "Ronald Corbett", with a horizontal line extending from the end of the signature.

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Dated: November 17, 2008

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VIII. APPENDIX A - CLAIMS

1. An apparatus comprising:

a substrate having at least a first surface; and

a plurality of closed cells disposed in a predetermined feature pattern on said at least a first surface,

means for changing the pressure of at least a first fluid disposed within said plurality of closed cells in order to cause a selected liquid to change the degree of penetration of said feature pattern.
2. The apparatus of claim 1 wherein said plurality of closed cells each have at least a first dimension less than 1 millimeter.
3. The apparatus of claim 1 wherein said plurality of closed cells each have at least a first dimension less than 1 micron.
4. The apparatus of claim 1 wherein said means for changing the pressure of at least a first fluid comprises means for changing the temperature of said at least a first fluid.
5. An apparatus comprising:

a substrate having at least a first surface; and

a plurality of closed cells disposed in a predetermined feature pattern on said at least a first surface,

means for changing the pressure of at least a first fluid disposed within said plurality of closed cells in order to cause a selected liquid to change the degree of penetration of said feature pattern, wherein said means for changing the pressure of at least a first fluid comprises means for

injecting and removing varying amounts of said fluid into and out of said cells, respectively.

6. The apparatus of claim 1 wherein the means for changing the pressure of at least a first fluid comprises a liquid disposed on said feature pattern in a way such that, upon the pressure of said liquid changing, the pressure of said fluid changes.

Claims 7-11 (canceled)

12. The apparatus of claim 1 wherein the closed cells have a width ranging from about 4 to 25 microns.

13. The apparatus of claim 1 wherein the closed cells have a height-to-width ratio ranging from about 0.12 to 0.18.

IX. APPENDIX B - EVIDENCE

None

X. RELATED PROCEEDINGS APPENDIX

None